

- Page 3, between lines 24 and 25
- Page 5, line 21 to page 6, line 2

REMARKS

Initially, it is respectfully noted that Applicant's representative requested an interview with Examiner Cadugan on July 11, 2001, to discuss amendments to the claims that might help the Examiner better understand the invention, but that the interview request was denied.

Reconsideration of the application is respectfully requested for the following reasons:

1. Objection to Drawings Under 37 C.F.R. §1.83(a)

This objection has been addressed as follows:

- cross-sectional line 14-14 has been added to Fig. 5(b), and
- New Fig. 14 has been added to more clearly show the meander shape or extension at least in partial areas parallel to a direction of the tool track line of claim 24.

→ not what is claimed in cl. 24

New Fig. 14 is a cross sectional perspective view taken at line 14-14 in Fig. 5(b). Therefore, new Fig. 14 and the corresponding additions to pages 3 and 5 of the original specification do not represent new matter.

2. Objection to the Specification under 37 C.F.R. §1.75(d)(1) and M.P.E.P. §608.01(o)

The objection has been addressed in the following manner:

- (i) As to the "meander-shape", the Examiner is directed to page 5, lines 24-27, and to Fig. 5(b). Newly added Figure 14 shows a cross-sectional perspective view of the meander-shape.

→ tool track yes, substructure no

(ii) As to the phraseology "or extends at least in partial areas parallel to a direction of the contour line", the Examiner is directed to Figs. 5(b) and 5(c). As seen in Fig. 5(b) and newly added Fig. 14, the meander-shaped line 17 is parallel in partial areas to one of the contour lines 9 of track 12, and as seen in Fig. 5(c), the tool tracks 18, 19 and 20 are parallel in partial areas to one of the contour lines 9 of track 12, described on page 5, line 26 to page 6, line 2 of the original specification. Thus, it is believed that appropriate antecedent basis for the claim language is present in the specification.

tool track
not
substructure
note
that if
appears
is
intending
to claim
such
a tool
track
that
Shima
teaches
it

(iii) As to the machine-readable information, there is support on page 9, lines 11-13 of the original specification, "Instead of visually recognizable information, however, one can also bring in different, for example machine-readable information in this way. . ." which provides proper antecedent basis for "the substructure represents machine-readable information", as recited in Claim 30.

again,
tool track
not
substructure

(iv) As to the phraseology "the substructure is executed in the form of grooves", it is respectfully noted that Figs. 6(b) and 6(c) clearly show grooves, and that the specification on page 2, lines 7 -18 has been amended to explicitly mention the "grooves".

tool
track

The specification has been revised as required in item 4 on page 3 of the Official Action. It is respectfully submitted that the changes do not involve new matter.

Rejection of Claims 1-35 Under 35 U.S.C. §112, 1st Paragraph

This rejection has been addressed in the following manner:

Claim 34 has been amended to change "production" to --reproduction--.

not
substantive
fig. 13
office

The "two-dimensional line originals" to which the Examiner refers, are produced in a computer or read in via an input device (page 2, lines 17-19). The phrase does not refer to a printing plate. A printing plate is not two-dimensional but three-dimensional. One of the

Not as claimed
marks
ind.

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problems that has occurred in the past is that if an "*original plate is damage or lost, no identical plate can be produced since each plate is an individual production. . .*" (Page 1, lines 13-15). The invention proposes a method permitting automated production of multiple embossing plates (page 2, lines 3-5; page 3, lines 3-4, 7-10). The "template" on which the production of the multiple plates is based can either be computer generated or read in via an input device (page 2, lines 18-19). Page 3, lines 27-29, state that "*The original, which is present on paper for example, can be digitally acquired in a computer with the aid of a scanner or another suitable data input means* (emphasis added)." Since the original plate is three dimensional, the computer cannot process data from the original plate directly. A paper original from the original plate must used so the information can be processed with the aid of a scanner. Thus, an "original" plate can used to create multiple plates via an "original" paper template which is processed with the aid of an input device. Claim 34 did not recite that the embossing plate is directly used for reproduction on which additional plates is based, and now has been amended to further emphasize that the plates are "reproductions" of the original plate.

not substantive
arguing
stuff
not
claimed

4. Rejection of Claims 1-35 Under 35 U.S.C. §112, 2nd Paragraph

This rejection has been addressed as follows:

- a. "at least one" has been inserted or deleted as necessary in Claims 1, 24, and 25 to provide proper antecedent basis,
- b. "said", "the", "a" or "an" has been corrected in claims 1, 8, 9, and 20,
- c. "it" has been replaced by --said tool-- in claim 8 to clarify the claim language.

as required in item 7, on pages 5-6 of the Official Action.

As to the Examiner's 112 2nd paragraph rejection of Claim 1 as "*having no structure to support the function of bringing a line into the surface of the embossing plate*", Claim 1 is a method claim and "the function of bringing . . ." does not need structure associated with it.

poss., check
end

As to the Examiner's rejection of Claims 34 and 34 as being incomplete for the omitting an essential step to define "using the embossing or intaglio printing plate". Claims 34 and 35 are hybrid claims, dependent upon claim 24. Claim 34 recites that the plate of claim 24 is used as an original on which reproduction of additional embossing or intaglio printing plates is based. Similarly, claim 35 recites that the plate of claim 24 is used for producing documents of value. It appears that the claims are complete since claims 34 and 35 clearly state what the use is.

Unclear what action is set forth in the verb "using".
doesn't state what is involved in using.

Having address the ground for rejection under 35 U.S.C. §112, 2nd Paragraph, withdrawal of the rejection is respectfully requested.

5. Rejection of Claims 24-25 and 28-35 Under 35 U.S.C. §102(b) in view of U.S. Patent No. 2,210,923 (Jacquerod) or Under 35 U.S.C. §103(a) in view of the Jacquerod Patent and U.S. Patent No. 4,972,323 (Cauwet)

Reconsideration of the application is respectfully requested on the grounds that the Jacquerod and Cauwet patents fail to disclose or suggest a printing plate with a substructure engraved into at least one depression, characterized in that the substructure is meander-shaped or extends at least in partial areas parallel to a direction of said at least one line.

Instead, Jacquerod grains the bottoms of the intaglio lettering by an etching process. The plate "... is inked lightly if fine stippling is desired in the bottoms and heavily inked when coarse stippling is desired. The plate is then etched until the acid breaks the ink down and the bottoms of the incisions are formed in a stippled-effect design." (Page 2, col. 1, lines 24-29). The substructures of Jacquerod are random patterns of dimples in a stippled pattern 11a (Page 1, Col. 1, lines 43-46; Page 2, Col. 1, lines 40-41, 48-49) as seen in Figs. 1 and 3.

see
CWT
fig.

The present invention does not involve etching to produce a random stippled-effect pattern but by engraving lines in the substructure having a specific, non-random, meandering or partially straight lines, i.e., depressions engraved "in the form of a line," as recited in claim 24. As seen in Fig. 4, a contour (engraved) line is first made (#9) into the plate. Because of

see
fig.

the size of the tool 14, the tool cannot completely remove the entire area with one pass and a residual area 16 is left. This residual area is removed by engraving in either a meander shape (Fig. 5(b)) or in a direction parallel to the contour lines (Fig. 5(c)) which defines the substructure. The roughness is based on the offset of the tool (Figs. 6(b) and (c)). Jacquerod teaches a random pattern produced by stippling using an etching technique and does not have a substructure having a specific shaped, *i.e.* meandering or partially straight lines using an engraving technique.

substructure
could be
considered

The Cauwet patent does not include any specific teachings concerning engraving meandering or partially straight substructures in a linearly engraved depression, and therefore could not have motivated the ordinary artisan to modify the teachings of Jacquerod to obtain the claimed invention, particular since Cauwet is not concerned with the manufacture of printing or embossing plates of the type disclosed by Jacquerod, but rather with the engraving of small ornamental or utility objects such as medals, jewelry or portraits.

In fact, Jacquerod teaches against mechanically placing a pattern onto the substructure using a machine, since according to Jacquerod, ". . . *such mechanical treating of the plate is very expensive. It requires the labor of a skilled engraver who is required to put in many hours of work to cross hatch even a small area . . .*" (Page 1, col. 1, lines 20-24). The Jacquerod and Cauwet patents have different objectives, and none discloses or even suggests the claimed substructure engraved into said at least one depression, characterized in that the substructure is meander-shaped or extends at least in partial areas parallel to a direction of said at least one line.

The claimed substructure arrangement, in which meandering or partially straight lines are engraved into linearly engraved structures, lends itself to numerical control of plate formation, and is clearly distinguishable from the random substructure arrangement of Jacquerod. Moreover, the Cauwet patent includes no suggestion, either implied or express,

that would have led one of ordinary skill in the art to modify the Jacquered patent to include such structures.

Instead of viewing the references in the manner that one of ordinary skill in the art would have viewed the references, *i.e. as a whole*, without the benefit of hindsight observations concerning what might happen if the structures were modified in the claimed manner despite the absence of any apparent reason to do so. There is simply no apparent reason in any of the references for making the substructure in the plate such as the one in Jacquered to be engraved such that the substructure has a specific shape, *i.e.* meandering or partially straight lines.

To guard against such arbitrary conclusions, the courts have set forth a very specific tests for obviousness, namely that a combination is only obvious if the prior art suggests the combination. If the prior art shows numerous plates without the engraved meander-shaped or partially straight lines and none with such lines, it is reasonable to conclude that the ordinary artisan in fact did not find engraved meander-shaped or partially straight lines to be obvious.

One can create hypothetical situations, as the Examiner has done on page 8 of the Official Action, to the effect that "a line could be drawn that connects the substructures, which line could be parallel to at least one of the depression flanks, and which could be drawn in a meandering fashion," and thereby come up with the claimed invention, but it is only in hindsight that such a modification could be attributed to either Jacquered or Cauwet. Since Jacquered teaches etching, not engraving, and teaches away from mechanically placing a pattern onto the substructure, there is no apparent reason to modify Jacquered in the manner as stated by the Examiner.

Because Jacquered does not teach the claimed inclusion of engraved meandering or partially linear substructures in engraved depressions that are "in the form of a line," Jacquered does not anticipate the claimed invention, and since Cauwet does not include any

teachings that would have motivated the ordinary artisan to modify the plates of Jacqueroed to include such meandering or partially linear substructures, it is respectfully submitted that the rejections of claims 23-35 and 28-35 under 35 U.S.C. §102(b) and §103(a) are improper and should be withdrawn.

5. Rejection of Claims 1-3, 5-11, 14, 16-18, 20 and 36 Under 35 U.S.C. §103(a) in view of U.S. Patent No. 4,949,270 (Shima)

This rejection is respectfully traversed on the grounds that the method of Shima does not include the step of producing at least one depression in the form of at least one line, the line defining a limited partial area of the surface, and an edge of the partial area defining a desired contour, as recited in claim 1.

According to the Examiner, this feature is suggested by Figs. 13 and 16 of Shima. However, while Figs. 13 and 16 of Shima and the accompanying description suggest that it is known in the prior art to remove a predetermined area or "hollowing out" by moving the engraving tool along adjacent paths, there is no disclosure to suggest the step of producing at least one depression in the form of a line, the line defining a partial area, and an edge of the partial area defining a desired contour.

In fact, Shima teaches displaying the profile outline or contour on a display screen of a computer (Col. 1, lines 62-65; Col. 2, lines 45-46). The cursor is then successively positioned and its coordinates are inputted at selected points on the display screen. The tool path is calculated by a computer program with the starting and end points, *i.e.*, their coordinates, which are manually predetermined or set in order to hollow out the interior of the profile or contour displayed on the screen. The Shima patent actually concerns so-called "pocket machining" for hollowing out the interior of the profile of a workpiece rather than engraving of printing or embossing plates. Shima is not concerned with micro-engraving to produce high-quality printed products, and Shima does not first define a desired contour on the plate by using a tool to producing at least one depression in the form of a line, the line

defining a partial area, and an edge of the partial area defining a desired contour, as recited in claim 1.

The present invention is concerned with a method for producing embossing plates, in particular steel intaglio printing plates for producing high-quality printed products, such as bank notes or identification cards. This is done by defining a desired contour, calculating a tool track in which an engraving tool must move to engrave the defined contour on the embossing plate. Tool tracks are determined such that the engraving tool 14 is guided along the desired contour lines so that the desired contour lines remain in tact, as seen in Fig. 4, a tool track 13 is calculated which defines a contour 9.

Because Shima does not teach or even suggest the claimed the step of producing at least one depression in the form of at least one line which defines a limited partial area of the surface, and an edge of the partial area defining a desired contour, it is respectfully submitted that the rejection of claims 1-3, 5-11, 14, and 16-20 under 35 U.S.C. §102(b) is improper and should be withdrawn.

6. Rejection of Claims 4, 12, 13, and 15 Under 35 U.S.C. §103(a) in view of U.S. Patent Nos. 4,949,270 (Shima) and 4,972,323 (Cauwet)

This rejection is respectfully traversed on the grounds that the Cauwet patent fails to disclose or suggest the step of calculating a tool path by determining the outer contour and the desired depth of an area to be engraved, as claimed, so that the area enclosed by the outer contour can be engraved automatically and without specifically determining coordinates for the tool path. Instead, Cauwet specifically teaches renewal of engraving depth control signals "with each path," in a manner that appears to be similar to that of Shima but that is contrary to the method of the present invention.

Because Cauwet does not include any teachings that would have motivated the ordinary artisan to rely on the outer contour and desired depth when implementing a method

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of the type disclosed in Shima, it is respectfully submitted that the rejection of claims 4, 12, 13, and 15 under 35 U.S.C. §103(a) is improper and should be withdrawn.

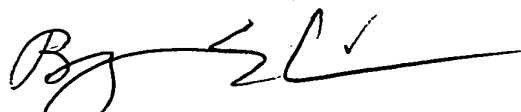
7. Rejection of Claims 21 and 22 Under 35 U.S.C. §103(a) in view of U.S. Patent No. 4,949,270 (Shima), 4,972,323 (Cauwet), and 2,210,923 (Jacquerod)

This rejection is respectfully traversed on the grounds that the Jacquerod patent, like the Cauwet and Shima patents, fails to disclose or suggest the claimed step of calculating a tool path by determining the outer contour and the desired depth of an area to be engraved, which has the advantage that the area enclosed by the outer contour can be engraved automatically and without specifically determining coordinates for the tool path, and further on the grounds that the ordinary artisan would not have thought to combine a printing or embossing plate engraving method of the type disclosed by Jacquerod with the workpiece forming method of Shima, and the decorative article engraving method of Cauwet.

Because neither Cauwet nor Jacquerod includes any teachings that would have motivated the ordinary artisan to rely on the outer contour and desired depth when implementing a method of the type disclosed in Shima, it is respectfully submitted that the rejection of claims 4, 12, 13, and 15 under 35 U.S.C. §103(a) is improper and should be withdrawn.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,
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APPENDIX B
(Marked-Up Copy Of Amended Claim)

1. (Twice Amended) A method for producing an embossing plate having a surface with at least one depression in the form of [a] at least one line brought into the surface of the embossing plate, characterized in that the at least one line defines a limited partial area of the surface, an edge of the [at least one] partial area defining a desired contour, and a tool track located within the desired contour being determined from the desired contour and a predetermined desired depth determining a penetration depth of [the] an engraving tool, the engraving tool being controlled along said track such that a material of [a] said partial area is removed within the desired contour at the predetermined desired depth.

8. (Amended) The method of claim 7, characterized in that the residual area is removed by controlling the engraving tool such that [it] said tool removes [the] a surface of the residual area in tracks which are similar or contour-parallel to the desired contour.

9. (Amended) The method of claim 7, characterized in that the residual area is removed by controlling the engraving tool such that [the] a surface of the residual area is removed in a meander shape.

20. (Amended) The method of claim 1, characterized in that [one] said plate is engraved with several engraving tools simultaneously.

24. (Twice Amended) An embossing or intaglio printing plate having a surface with at least one engraved depression in the form of a line, said at least one depression having flanks, a bottom, and a substructure engraved into said at least one depression, a width of said substructure being smaller than a width of the at least one depression, characterized in that the substructure is meander-shaped or extends at least in partial areas parallel to a direction of said at least one line.

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25. (Twice Amended) The embossing or intaglio printing plate of claim 24, characterized in that the substructure is present on the bottom of the at least one depression, on at least one of the flanks of the at least one depression, or on both the bottom and the at least one of the flanks of the at least one depression.

34. (Twice Amended) A method, comprising the step of using the embossing or intaglio printing plate of claim 24 as an original on which [production] reproduction of additional embossing or intaglio printing plates is based.

APPENDIX D
(Marked-Up Copy of Amended Paragraphs)

Page 2, lines 7 to 18:

The invention is based on the finding that it is possible to treat a two-dimensional line original graphically such that the existing lines are interpreted as areas. These areas are limited by edges, these edges defining a desired contour of the area. Starting out from this desired contour one determines a tool track along which an engraving tool can be guided such that material is removed within the area limited by the desired contour. The engraving tool is controlled such that the material within the desired contour is removed in the form of continuous or interrupted lines or grooves in a certain depth profile. This depth profile can be determined by a depth value that is constant or varies within the desired contour.

Page 3, between lines 24 and 25:

Fig. 14 is a cross-sectional perspective view of Fig. 5(b) taken at line 14-14.

Page 5, line 21 to page 6, line 2:

As to be seen in Fig. 5(a), it is necessary in this case also to consider residual area 16 not removable in the first step when calculating the tool track for removing area 8. For removing residual area 16 one can determine different tool tracks depending on the desired engraving results. Thus the tool track can, as shown in Fig. 5(b), first extend along the desired contour and residual area 16 then be removed in a meander shape, the engraving tool removing the residual area continuously in meander-shaped track 17 within area 16. Fig. 13 ¹⁴ is the three-dimensional cross sectional view of Fig. 5(b) taken at line 14-14, showing the meander-shaped substrate. Fig. 5(c) shows a further possibility whereby residual area 16 is removed by guidance of the engraving tool along tool tracks which are similar in the mathematical sense to tool track 12 first calculated, i.e. tool tracks 18, 19 and 20 correspond to tool track 12 in form but have a different dimension from tool track 12. Particularly in the case of curved contour lines, residual area 16 can accordingly be removed using tool tracks which extend contour-parallel, i.e. are equidistant from the contour line at each point.

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ECC

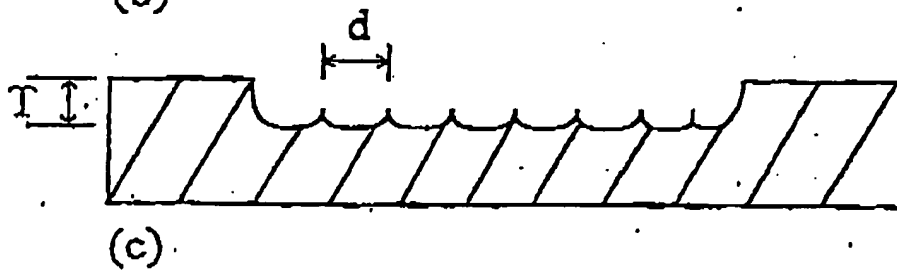
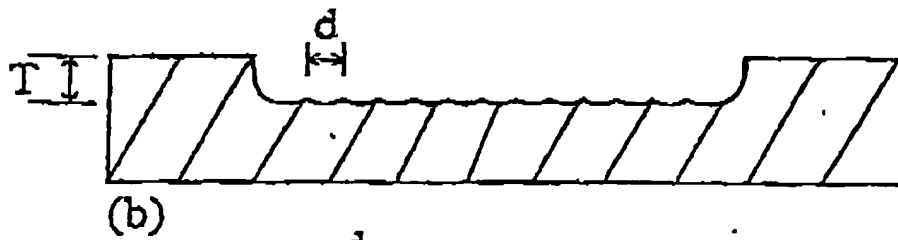
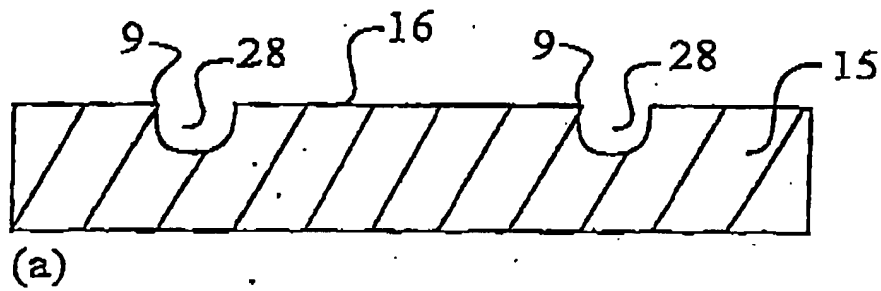
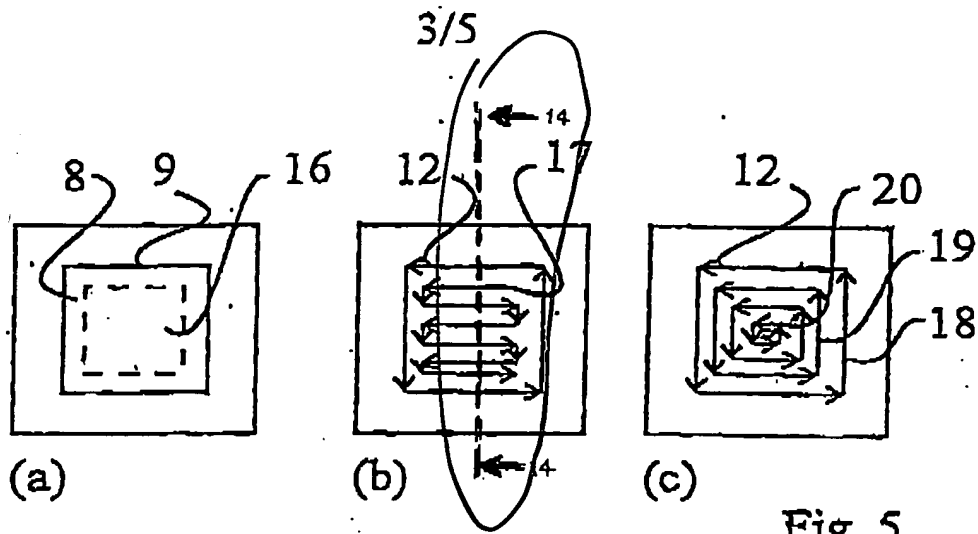


Fig. 6

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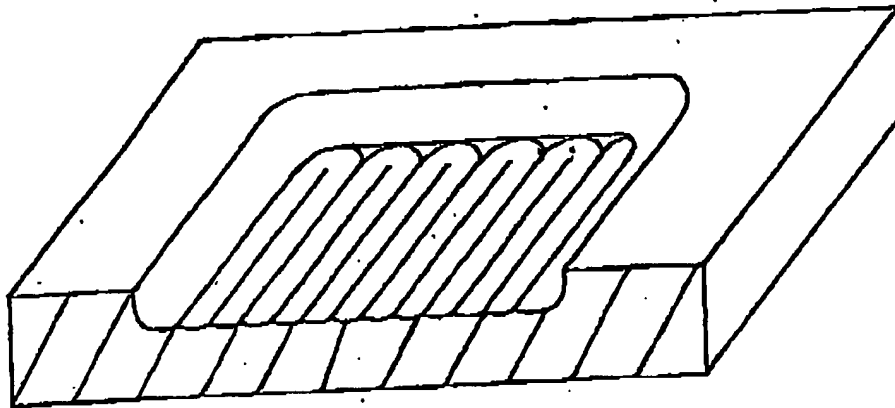


FIG. 14